#12 letter 10/30/03

GREENBLUM & BERNSTEIN, P.L.C. **FAX MSG NO. P21261.F05** **PAGE 1 OF 12**

SENDING FAX NO.: 703-716-1180

**********CONFIDENTIALITY NOTE**********

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CALLED TEL NO.	:	1 703-872-9314
TO	:	U.S. Patent and Trademark Office--Attn: Salvatore CANGIALOSI
FROM	:	GREENBLUM & BERNSTEIN, P.L.C.
DATE	:	September 11, 2003
SUBJECT	:	PCT International Patent Application No. PCT/US01/26001 in the name of PADCOM, Inc., entitled "Method and Apparatus for Routing Data over Multiple Wireless Networks"; Our Ref: P21261

Dear Mr. Cangialosi:

Please find attached a copy of a Reply to IPEA Written Opinion which was filed with the USPTO on February 21, 2003, along with the date-stamped mailroom receipt. We note that the IPER issued on May 19, 2003 does not take into consideration the amendment to the claims as submitted with the Reply to the Written Opinion. Accordingly, we respectfully request that you review the attached documents and issue a new IPER.

Should you have any questions regarding this matter, please do not hesitate to contact me at 703-716-1191.

Thank you for your prompt attention in this matter.

Best regards,
Arnold Turk Arnold Turk/1CBZ

Attached: Reply to IPEA Written Opinion Under Rule 66.3 (copy)
Mailroom date-stamped receipt (copy)

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The Patent Office Date stamp hereon is an acknowledgement that, on the date indicated, the Patent Office received the following:

(X) Reply To IPEA written opinion Under Rule 66.3
( ) Amendment _____
( ) Executed Assignment and cover letter
( ) by facsimile
( ) Executed S.E.S. ( ) S.E.S. Assertion
( ) Req. for Ext. of Time
( ) Fee Filing ( )
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( ) PTOL-85B Issue Fee
( ) Letter to Draftsman
( ) Design Patent Application Transmittal
( ) Utility Patent Application Transmittal
( ) Provisional Application Cover Sheet
( ) Continued Prosecution Application (CPA) Request Transmittal
( ) Request for Continued Examination (RCE) including Submission
( ) Cover Letter
( ) Check No. for $
( ) Rule 53b and 53f Letter for Unexecuted Application
( ) Claim of Priority & Certified Copy of _____
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( ) Declaration ( ) Supplemental
( ) New ( ) Unexecuted
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( ) Transmittal Letter
( ) Patent Application
( ) Provisional ( ) Reexam
( ) Reissue ( ) Design
( ) Continuation ( ) CIP
_____ pages (w/abstract)
_____ claims _____ independent
_____ sheets of drawings
_____ figures
( ) I.D.S. form PTO-1449 & References ( ) as attached ( ) as listed on reverse
( ) One self-addressed postcard.
( ) Certification under 1.97(e)
( ) Certificate of Mailing (C-O-M)
( ) Returned Envelope
(X) Substitute pages 65-70

In the matter of : APPARATUS AND METHOD FOR ROUTING DATA OVER MULTIPLE WIRELESS NETWORKS

Applicant : ~~David J. Whitmore~~ Padcom Inc.

Application No. : PCT/US01/26001 Filed : 8/24/2001

Patent No. : Issued :

Docket : P21261 AL/AT

P21261.A03

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : PADCOM, Inc.

Appl. No : PCT/US01/26001

Filed : 24 August 2001

For : APPARATUS AND METHOD FOR ROUTING DATA OVER MULTIPLE WIRELESS NETWORKS

REPLY TO IPEA WRITTEN OPINION UNDER RULE 66.3

Commissioner of Patents and Trademarks
BOX PCT
Washington, DC 20231

COPY

Sir:

This is in response to the Written Opinion - Form PCT/IPEA/408 mailed by the International Preliminary Examination Authority on 21 January 2003 setting a period of one month for filing a Reply, i.e., until 21 February 2003.

An Amendment to the claims accompanies this reply including claims 1-22 on pages 65-70 in response to the Written Opinion to replace claims 1-23 appearing on pages 65-70 of the originally filed application.

With respect to the amendments to the claims, it is noted that claims 1 - 6, 11, 13, 19, 20, and 22 will be amended. Claim 23 will have been canceled. Applicant points out that claims 1, 5, 13, 20 and 22 have been amended to clarify that the networks are dissimilar networks. Support for the amendments can be found throughout the specification, for example *inter alia*, at page 42.

Claim 1 has been amended to recite that each router network adapter converts data from an internal protocol format to an outbound format for sending data, and also converts data from an incoming format to the internal protocol format. The newly added limitation was previously in claim 2, which has been amended to delete the limitation. Claim 1 has also been amended to correct a typographical error. More specifically, at line 16 of claim 1, "a" has been deleted.

Claims 3 and 4 have been amended to depend from claim 1, instead of claim 2.

Claim 5 has been amended into independent form to include the limitations of claim.

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1. In addition, claim 5 has been amended to recite that the router network adapter queries an associated transceiver to determine a status of the associated wireless network, the status comprising an indication of whether the associated wireless network is operational and an indication of whether the associated wireless network is in range. Claim 6 has been amended to state that the message indicates whether the network is in range and that the message is from the router network adapter. Support for the amendments can be found, *inter alia*, at page 60 of the specification and original claim 5.

Claim 11 has been amended to depend from claim 5.

Claim 22 has been replaced with claim 23, which has been canceled. Claims 13 and 22 (former claim 23) have been amended to require converting the data from a received format to an internal format. Claim 19 included a similar limitation and accordingly, the limitation has been deleted from claim 19.

Claim 20 has been replaced with former claim 22. Claim 20 has been amended to recite that the each router network adapter queries an associated transceiver to determine a status of the associated wireless network, the status comprising an indication of whether the associated wireless network is operational and an indication of whether the associated wireless network is in range. Support for the amendment can be found, *inter alia*, at page 60 of the specification and original claim 5.

Applicant respectfully submits that no new matter is included in the amendment to the claims.

In the Written Opinion, the Examiner found that claims 1-23 meet the novelty criteria. Moreover, the Examiner found that claims 1-23 meet the industrial applicability criteria.

Despite the above indications, the Written Opinion asserts that claims 1-23 lack an inventive step under PCT Article 33(3) over AZIZ or SHARMAN in view of LOGSDON et al.

With regard to the merits of the rejection, applicant respectfully submits that the references of record do not teach or suggest applicant's disclosed and claimed invention.

The presently amended claims now relate to communicating/routing data via multiple dissimilar networks. Neither AZIZ nor LOGSDON et al. pertain to multiple dissimilar networks, each reference discussing only a single type of network. Thus, it is submitted that

these references are no longer relevant to the claims.

Claims 1, 13, and 22 now recite converting data from a received format into another format. An advantage of the claimed conversion is that different types of networks can be used. For example, non-IP networks can be used to transport the data and once the non-IP data is received, it is converted into IP data for processing.

SHARMAN discusses multiple dissimilar networks, however, SHARMAN does not teach or suggest translating data from one format to another. In fact, SHARMAN only discusses IP networks, e.g., at col. 6, lines 29 - 31. In addition, at col. 16, lines 18 - 21, SHARMAN describes the mobile end system's processing as being according to the Internet IP protocol. Thus, because all of the data is in the same format, SHARMAN has no need to convert protocols, as presently claimed.

Claim 1 also recites that a router network adapter, which is within the router, performs the conversion. In contrast, SHARMAN's routers simply forward the data without any protocol conversion. SHARMAN's extracting of an encapsulated packet is not a protocol conversion. An example of a protocol conversion is converting non-IP data into IP data.

Claims 5 and 20 further recite that the router network adapter (of the mobile routing device) queries an associated transceiver to determine a status of the associated wireless network. The status can indicate whether the associated wireless network is operational and can also indicate whether the associated wireless network is in range. The claimed status query is intended to cover both methods described on page 60 of the specification. That is, the claimed status query could be an active query to the transceiver or an unsolicited response from the transceiver. Such a feature is not shown by SHARMAN.

Furthermore, an advantage of the router network adapter obtaining such information from the transceiver is that the network status is obtained very quickly. In a typical prior art scenario, pinging is used to obtain a network status. A ping often takes a full second. Moreover, multiple pings are usually required to determine that a network is unavailable, resulting in a multiple second delay. Consequently, the presently claimed invention provides a much quicker status check of the network. In addition, pinging sends a packet across the network, which may incur fees (if the network charges for each packet sent). In this case, the present invention also provides a cost advantage over typical systems.

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In view of the above, applicant respectfully submits that the rejections are improper and should be withdrawn. Applicant therefore respectfully submits that the claims comply with the criteria set out in PCT 33(2)-(4). Accordingly, each of the presently pending claims, i.e., claims 1-22, has novelty, inventive step, and industrial applicability.

A positive International Preliminary Examination Report is therefore respectfully requested.

If any fees are necessary for entry of this submission and/or to maintain the pendency of this International Application, authorization is hereby provided for charging Deposit Account No. 19-0089 any necessary fee.

Should there be any questions, the Examiner is requested to contact the undersigned at the below-listed telephone number.

Respectfully submitted,
PADCOM, INC.

Neil F. Greenblum
Reg. No. 28,394

Reg no. 33,094

20 February 2003
GREENBLUM & BERNSTEIN, P.L.C.
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WHAT IS CLAIMED:

1. A mobile routing device that communicates over multiple dissimilar wireless networks with a Host Network Server residing on a Local Area Network, the mobile routing device also communicating with at least one client device, the mobile routing device comprising:

a plurality of router network adapters, each interfacing with one of the dissimilar wireless networks to send and receive data from the wireless network and having a gateway address, associated with the wireless network, that the Host Network Server uses to send data to the mobile routing device, each router network adapter converting data from an internal protocol format to an outbound format for sending data and converting data from an incoming format, in which received data is, to the internal protocol format; and

at least one client router network adapter that interfaces with the at least one client device, each client router network adapter being associated with an end point address that a sending application uses to send data to the client device;

wherein data is sent to the client device via the Host Network Server, via at least one of the wireless networks, and via the mobile routing device, using only the end point address so that the sending application is unaware of the wireless networks used to transport the data and the corresponding gateway addresses.

2. The mobile routing device of claim 1 in which each client router network adapter and each router network adapter monitors the status of the associated wireless network and client communications link.

3. The mobile routing device of claim 1, in which the internal protocol comprises Internet Protocol.

4. The mobile routing device of claim 1, further comprising a Router System Module that configures and launches each router network adapter, client router network adapter and a Router Module.

5. A mobile routing device that communicates over multiple dissimilar wireless networks with a Host Network Server residing on a Local Area Network, the mobile routing device also communicating with at least one client device, the mobile routing device comprising:

a plurality of router network adapters, each interfacing with one of the dissimilar wireless networks to send and receive data from the wireless network and having a gateway address, associated with the wireless network, that the Host Network Server uses to send data to the mobile routing device, each router network adapter querying an associated transceiver to determine a status of the associated wireless network, the status comprising an indication of whether the associated wireless network is operational and an indication of whether the associated wireless network is in range; and

at least one client router network adapter that interfaces with the at least one client device, each client router network adapter being associated with an end point address that a sending application uses to send data to the client device;

wherein data is sent to the client device via the Host Network Server, via at least one of the wireless networks, and via the mobile routing device, using only the end point address so that the sending application is unaware of the wireless networks used to transport the data and the corresponding gateway addresses.

6. The mobile routing device of claim 5, in which the Router Module selects one of the wireless networks from a plurality of candidate wireless networks for data transmission only when the Router Module has received a message from the router network adapter indicating that the associated candidate wireless network is operational and in range.

7. The mobile routing device of claim 6, in which the Local Area Network comprises at least one Host Application, the sending application further comprising the at least one Host Application.

8. The mobile routing device of claim 6, in which the Router Module generates a Route Registration packet and sends the Route Registration packet to the Host Network Server, when the Router Module has selected a new wireless network, the Route Registration packet comprising the gateway address of the new wireless network and the end point addresses that can be reached via the gateway address,

wherein the Host Network Server remains aware of all end point addresses that can be reached via the gateway address contained in the Route Registration packet.

9. The mobile routing device of claim 1, in which a second mobile routing device sends data to the mobile routing device via the Host Network Server using the end point

address,

wherein the second mobile routing device sends data to the client device via the mobile routing device, via the Host Network Server, and at least one of the wireless networks using only the end point address so that the second mobile routing device is unaware of the wireless networks used to transport the data and the corresponding gateway addresses.

10. The mobile routing device of claim 1, further comprising a Router Configuration Module that reads in configuration data for each router network adapter and for each client router network adapter, the configuration data comprising the gateway addresses and the end point addresses.

11. The mobile routing device of claim 5, in which the gateway address comprises an IP address and the wireless network comprises an IP network.

12. The mobile routing device of claim 1, in which the gateway address comprises a hardware address and the wireless network comprises a non-IP network.

13. A method for routing data to a client device communicating with a mobile routing device via a Host Network Server and at least one of a plurality of dissimilar wireless networks, the method comprising:

identifying the client device and a corresponding end point address;

forwarding the data to the Host Network Server using the end point address;

receiving the data at the Host Network Server;

ascertaining a gateway address corresponding to the end point address, the gateway address being associated with a selected wireless network that was selected for communicating with the mobile routing device corresponding to the client device;

forwarding the data to the mobile routing device via the selected wireless network using the gateway address;

converting the data from a received protocol format to an internal protocol format; and

forwarding the data from the mobile routing device to the client device based upon the end point address.

14. The method of claim 13, in which the receiving further comprises:

receiving the data at a Network Interface from an originating wireless network;

saving a source hardware address and an end point hardware address, if the originating wireless network is a non-IP network;

forwarding the data to a Router Manager; and

analyzing the source hardware address, if the originating wireless network is a non-IP network; and

analyzing the source IP address, if the originating wireless network is an IP network.

15. The method of claim 14, in which the analyzing further comprises:

determining whether the source address is present in a route table;

updating the route table to reflect that data has been received from the wireless network corresponding to the source address, if the source address is present in the route table; and

adding the source address to the route table, if the source address is not present in the route table.

16. The method of claim 13, in which the receiving further comprises:

receiving the data at an IP stack from a Local Area Network; and

forwarding the data to a Router Manager.

17. The method of claim 13, in which the ascertaining further comprises: determining a subnet that the end point address resides on, and looking up the gateway address in the route table based upon the subnet.

18. The method of claim 13, in which the forwarding the data to the mobile routing device further comprises:

forwarding the data to a Network Interface;

translating the data to a format compatible with the wireless network, if the wireless network is a non-IP network; and

transmitting the data via the wireless network;

if the data cannot be transmitted via the wireless network;

determining if an alternate route to the mobile routing device exists;

forwarding the data to an alternate Network Interface, if an alternate route exists;

translating the data to a format compatible with the alternate wireless network, if

the alternate wireless network is a non-IP network; and

transmitting the data via the alternate wireless network;

wherein the determining, forwarding, translating and transmitting repeat until the data is successfully transmitted or no alternate routes exist.

19. The method of claim 13, in which the forwarding to the client device further comprises:

receiving the data at a router network adapter;

determining whether the end point address is known locally;

forwarding the data to a client router network adapter, when the address is known locally; and

transmitting the data to the client device.

20. A data routing system for routing data over at least one of a plurality of dissimilar wireless networks, comprising:

a Host Network Server residing on a Local Area Network, the Host Network Server comprising a Router Manager that selects at least one of the dissimilar wireless networks for data transmission based upon an end point address corresponding to a client device associated with the mobile routing device, the selected wireless network being identified by a gateway address, and a plurality of host Network Interfaces, each host Network Interface interfacing with one of the wireless networks to send and receive data from the wireless network;

a mobile routing device comprising a plurality of router network adapters, each router network adapter interfacing with one of the dissimilar wireless networks to send and receive data from the wireless network and having a gateway address, associated with the wireless network, that the Host Network Server uses to send data to the mobile routing device, each router network adapter querying an associated transceiver to determine a status of the associated wireless network, the status comprising an indication of whether the associated wireless network is operational and an indication of whether the associated wireless network is in range, the mobile routing device also comprising at least one client router network adapter that interfaces with the at least one client device, each client router network adapter having an end point address that a sending application uses to send data to

the client device;

wherein the sending application sends data to the client device via the Host Network Server, via at least one of the wireless networks and via the mobile routing device, using only the end point address so that the sending application is unaware of the wireless networks used to transport the data and the corresponding gateway addresses.

21. The Host Network Server of claim 20, further comprising a route table that associates each end point address with at least one gateway address,

wherein the Host Network Server determines a wireless network to use for sending data to each end point address based upon a lookup in the route table.

22. A computer readable medium storing a computer program that routes data between a Host Network Server and a client device associated with a mobile routing device over at least one of a plurality of dissimilar wireless networks, the program comprising:

identifying the client device and a corresponding end point address;

forwarding the data to the Host Network Server using the end point address;

receiving the data at the Host Network Server;

ascertaining a gateway address corresponding to the end point address, the gateway address being associated with a selected wireless network that was selected for communicating with the mobile routing;

forwarding the data to the mobile routing device via the selected wireless network using the gateway address;

converting the data from an incoming non-IP format to an IP format; and

forwarding the data from the mobile routing device to the client device based upon the end point address.